

FROGS INTRODUCED ON ISLANDS

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THE specimens described below are in the herpetological collection of the University of Florida. I am indebted to Dr. Walter Auffenberg for permission to examine and describe them. Thanks are also extended to Dr. J. C. Dickinson, Jr., Mr. Thomas G. Baker, and Dr. Carter R. Gilbert, for useful information.

1. *Rana grylio* ON NEW PROVIDENCE ISLAND

The natural range of the pig frog, *Rana grylio* Stejneger, extends from Florida northward into South Carolina and westward into southeastern Texas.

Four young adults of *Rana grylio* (UF 17209-12) and one tadpole (UF 17213) were collected from Lake Killarney, New Providence Island, Bahamas, by Dr. Dickinson and Martin Dickinson, on August 12, 1958. The adult frogs include one male, 74 mm. in snout-vent length, and three females ranging in snout-vent length from 59 to 67 mm. The tadpole is 63 mm. in total length. Additional tadpoles (UF 17512-14) were taken in the lake by Dr. Dickinson on August 15, 1960. Evidently the species is breeding at the locality.

Dr. Dickinson was informed that the original stock had been deliberately introduced a few years previously, and had been obtained from a commercial source in Florida. The Bahaman specimens agreed very closely with those from central Florida.

Dr. Dickinson, who collected fishes in Lake Killarney in five different years, was impressed by the relative scarcity of small organisms, of kinds that might provide food for *Rana grylio*. The fish fauna, as identified by Dr. Gilbert, included *Cyprinodon variegatus*, *Gambusia manni*, *Rivulus* cf. *marmoratus*, *Eleotris amblyopsis*, and *Mugil* sp. Damselflies, dragonflies, and aquatic hemipterans were also noted. The lake is weakly saline, reminiscent of tidal flats in general aspect. It would not seem to provide an optimum habitat for the pig frog, although this species has occasionally been found about brackish marshes in the United States (Neill, 1958, p. 12).

2. *Rana catesbeiana* ON CUBA

The bullfrog, *Rana catesbeiana* Shaw, occur over much of eastern North America, and has also been introduced into many areas outside its natural range. Its presence on Cuba has been noted previously (Stejneger and Barbour, 1939, p. 44), but specific records for the island are lacking, and little is known about the abundance of the species there.

Three specimens (UF 17471-73) were collected by me at Rancho Mundito, at that time the estate of Col. Fulgencio Batista, in low mountains overlooking Consolación del Sur, Piñar del Rio Province, Cuba. Snout-vent lengths ranged from 41 to 75 mm. A few larger examples were also seen here. On the Rio Hondo, in the lowlands just west of Consolación del Sur, a young adult bullfrog was disgorged by a snake, *Tretanorhinus variabilis*, and a second young adult (WTN 2845) was collected from beside the stream. The latter frog measured 52 mm. in snout-vent length. Yet another small bullfrog (WTN 2846), 48 mm. in snout-vent length, was collected between Güines and Playa de Rosario, Habana Province. All the above-mentioned Cuban examples were taken in October, 1949.

Bullfrogs from Florida and the lower Coastal Plain of the southeastern United States are heavily dark-mottled above and below; specimens from above the Fall Line are usually plain greenish above and whitish below. Cuban examples resemble the latter population, and not the Florida one.

The bullfrog was more abundant on the Batista estate than at any other Cuban locality investigated; but even at Rancho Mundito it was by no means as common as in many parts of its natural range.

Cuba has no native frog similar to the bullfrog in habits. The giant Cuban toad, *Bufo peltacephalus* (Tschudi), roughly equals the bullfrog in size, but is often found in dry situations where the *Rana* is lacking. The *Bufo* also frequents stream and lake margins, where it might compete with the bullfrog. On the Batista estate the toad was far more common than the bullfrog. The next largest native frog of Cuba, *Hyla septentrionalis* Duméril and Bibron, is primarily arboreal and so not a frequent competitor of the bullfrog. However, during and immediately after hard rains, the *Hyla* will descend to forage on the ground. This treefrog was ex-

tremely abundant on the Batista estate. Thus at Rancho Mundito the two large native frogs did not appear to suffer from competition with the introduced species.

3. *Hyla aurea aurea* ON NEW CALEDONIA

The green-and-gold bellfrog, *Hyla aurea aurea* (Lesson), is native to eastern New South Wales, Australia. Moore (1961, p. 316) mentioned three examples from New Caledonia.

Seven individuals of *Hyla aurea aurea* (UF 17327-33) were taken near Noumea, New Caledonia, by Mr. Baker on June 5, 1962. The frogs were found on the road at night, in a low spot near a lake on the southern outskirts of the town.

In this lot the snout-vent length ranged from 58 to 71 mm. The dorsum was smooth; the dorsolateral fold, while low, was continuous, and was conspicuous by virtue of its pale coloration. A mid-dorsal stripe was lacking. All the specimens were referable to *Hyla aurea aurea*, not *H. aurea raniformis* (Keferstein). The latter subspecies may also have been introduced into New Caledonia, where one specimen has been taken (Moore, *loc. cit.*).

New Caledonia, lying in the South Pacific about 800 miles east of Australia, harbors no native frogs. *Hyla aurea aurea* probably arrived as a stowaway on ships, there being several large seaports within its natural range.

4. *Xenopus laevis* ON ASCENSION ISLAND

The African clawed frog, *Xenopus laevis laevis* (Daudin), is native to southern Africa.

Three specimens (UF 16000-02) are from Ascension Island, collected at Bates' Tank on July 9, 1958, by Richard G. Allan. In all of this lot the so-called "tentacle" was minute. The habitus was pyriform. The ratio of body width to head width fell between 1.4 and 1.5. The black claws, viewed from above, appeared flattened. The venter was immaculate, although the under surfaces of the hind limbs were weakly speckled in the two larger individuals. Snout-vent length ranged from 54 to 66 mm. The frogs are probably young adults of the subspecies *Xenopus laevis laevis*, as defined by Loveridge (1933, pp. 351-352).

Ascension Island, lying in the southern Atlantic about midway between Africa and South America, harbors no native frogs. The

origin of its *Xenopus* colony is not known. However, during the 1930's and 1940's, *X. laevis* was thought to be exceptionally useful in the early diagnosis of human pregnancy. Living specimens came to command a high price, and many colonies of the frog were virtually exterminated in parts of southern Africa. Efforts were made to breed the species in captivity, but with little success (Rose, 1950, pp. 16, 30). This circumstance may well have led to the attempted establishment of new colonies at points outside the natural range.

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